included in this substudy also had scar on the anterior wall.

Study Limitations

In this study, SPECT imaging was the only modality used for assessing myocardial viability. Other commonly used tests (eg, delayed enhancement cardiac magnetic resonance imaging) have not been examined in the STICH trial. It is possible that the more detailed and quantitative myocardial scarring information provided by delayed enhancement imaging with magnetic resonance would prove useful in the selection of appropriate patients for SVR. This possibility deserves further investigation.

The SVR hypothesis of the STICH trial was not designed to examine the impact of viability determination on outcomes in these patients. The present observations are based on a post hoc analysis of a subset of STICH patients who underwent viability testing with SPECT. Thus, the impact of these observations is reduced compared with a trial specifically designed to address this issue. In addition, the reduced number of patients limits the statistical power of our findings. Finally, the decision to enroll patients in this trial could have been influenced by prior viability testing. However, it must be noted that the majority of patients in this report had viability testing performed after randomization.

CONCLUSIONS

In patients with CAD and severe regional LV dysfunction, assessment of myocardial viability does not identify patients who will benefit in terms of survival from adding SVR to CABG.

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EDITORIAL COMMENTARY

Surgical ventricular restoration, myocardial viability, and your mother's fine china

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Holly and colleagues[1] present a post hoc analysis of the surgical arm of the Surgical Treatment for Ischemic Heart Failure (STICH) trial with hopes of shedding light on whether the presence or absence of myocardial viability alters outcomes after coronary artery bypass grafting (CABG) and surgical ventricular reconstruction (SVR) compared with CABG alone. There are many criticisms of the STICH trial

that remain valid in this post hoc analysis. In addition, analysis of a randomized trial based on variables not included in the original randomization process introduces clinical bias and weakens the results. This is evident in this study because only 267 patients of the 1000 undergoing surgery in the STICH had viability data. Nonetheless, it is intuitive that CABG alone would yield significant benefits in patients with septal and apical viability, and that addition of SVR might be harmful in these patients. Conversely, CABG/SVR might selectively benefit those with nonviable myocardium to be excluded by SVR.

Recruitment into any arm of the STICH trail required patients to be a candidate for medical management or CABG with or without SVR.[2] This excluded patients with left main disease, severe or unstable angina, and acute coronary syndromes. It also excluded patients with apical aneurysms and no need for surgical coronary intervention. Dor and colleagues[3] nicely illustrated a large series of patients who met exclusion criteria for STICH enrollment but, in their hands, achieved excellent clinical results after SVR with or without CABG. Of note, ventricular volumes in this series were large and average end-systolic volume index was reduced by approximately 50%. Reflecting trends at the time, the STICH trial included modestly enlarged ventricles and realized an average reduction of only 19% in end-systolic volume index. Many surgeons think the STICH trial reflects the results of inappropriate or overuse of SVR (the so-called drive-by SVR). Others argue that this was a trial of the procedure as it had evolved to be applied and therefore highly relevant. The results of the STICH trial should not be blindly extrapolated to all patients but rather applied to those meeting inclusion criteria.

In a similar post hoc analysis of the STICH trial, Bonow and colleagues[4] found that there was no difference in survival based on myocardial viability (as determined by single photon computed tomography or dobutamine stress echocardiography) once risk factors had been taken into account. Unlike the current study, this analysis included medically managed patients and was not designed to examine the effects of SVR based on viability. The current analysis attempts to address just that and answer the question from a more practical and surgical perspective. In this study, viability was not found to alter postoperative mortality when analyzed globally or regionally in patients undergoing CABG.

This study is subject to the debatable design problems with the STICH trial and inherent weaknesses of a post hoc analysis of a prospective randomized trial. Although it may not reflect the results achieved by Dor and colleagues[3] on larger ventricles, there are strengths to this study. It was prospective, used core laboratories for echocardiography and single photon computed tomography analysis, and, with 267 patients, may be the most accurate assessment of the importance of myocardial viability in the setting of SVR available. Ultimately, the take home message from the STICH trial is SVR should not be casually added to CABG in patients with normal to moderately enlarged hearts and apical wall motion abnormalities. Accordingly, use of SVR seems to have decreased significantly since the STICH trial. This study suggests that even those with nonviable myocardium do not benefit from the addition of SVR to CABG. This does not mean we should throw the baby out with the bathwater and abandon SVR. SVR is a physiologically attractive procedure but, in many ways, is still looking for a home. Those with severe ventricular enlargement associated with left anterior descending distribution wall motion abnormalities, as in Dor and colleagues' series,[3] appear to benefit from large reductions in ventricular size with SVR. Apical viability or not, those with modestly enlarged ventricles do not gain any survival benefit from SVR. Like fine china, this procedure should be stored safely in the closet and only brought out on special occasions.

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